

8.2
3/06/01

Health Consultation

RECEIVED

MAR 19 2001

DEPARTMENT OF
ENVIRONMENTAL QUALITY
POCATELLO

Air Contamination

EASTERN MICHAUD FLATS CONTAMINATION

POCATELLO, BANNOCK AND POWER COUNTIES, IDAHO

EPA FACILITY ID: IDD984666610

MARCH 6, 2001

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Agency for Toxic Substances and Disease Registry

Division of Health Assessment and Consultation

Atlanta, Georgia 30333

USEPA SF



1261994

I. SUMMARY

Based on its review of numerous air quality studies, the Agency for Toxic Substances and Disease Registry (ATSDR) concludes that releases of air contaminants from the Eastern Michaud Flats (EMF) Superfund site near Pocatello, Idaho, poses a **public health hazard**. This hazard has existed since at least 1975 and will continue to exist in the future unless emissions from the two phosphate processing plants on the site—FMC Corporation and J.R. Simplot Company—and from other sources are reduced. Important information on the nature and extent of this public health hazard follows:

- *What pollutants have reached hazardous levels?* Many agencies and researchers have measured the levels of air pollution in the area near the EMF Superfund site. These studies have measured air concentrations of the pollutants that FMC and Simplot emit in the greatest quantities. Of these pollutants, only airborne particulate matter—or particles and aerosols in the air—and sulfates have reached levels that are known to be associated with adverse health effects among exposed populations. Whether considering total suspended particulates (TSP), fine and coarse particulates combined (PM10), or fine particulates (PM2.5), air concentrations of particulate matter near the site have reached, and continue to reach, elevated and potentially unhealthy levels, as described below; and short-term levels of sulfates have periodically reached concentrations of health concern. Emissions from FMC and Simplot account for a very large quantity of the airborne particulate matter and sulfates in the area, but other sources undoubtedly contribute to this problem as well.

ATSDR thoroughly reviewed the available data for acids, metals, and other pollutants released from FMC and Simplot, but none appear individually to have reached levels of health concern; however, there is uncertainty in this conclusion. Current science provides little evidence as to whether the mix of these air contaminants may increase or decrease their toxicological effects because of cumulative exposures. However, the epidemiological evidence does indicate that PM, a measure of a mix of contaminants present in air, including many of the acids and metals detected in the EMF study area, is a good surrogate measure for estimating the short-term and long-term adverse cardiopulmonary health effects from exposure. From this standpoint, ATSDR evaluated and made definitive public health statements regarding the cumulative health effects of the exposure to the mix of acid aerosols and particulate metal contaminants present in the EMF study area as measured by PM. To confirm the above finding for acids and metals, ATSDR recommends ongoing air sampling for these pollutants.

Phosphine may have reached levels of health concern at the FMC fenceline. However, these levels of health concerns were obtained using unreliable methods. ATSDR recommends that more monitoring be performed to confirm these data.

- ***How are airborne particulate matter and sulfates harmful?*** High levels of airborne particulate matter and sulfates, like those observed near the EMF site, are known to be associated with various health problems, such as asthma attacks, upper respiratory illnesses, and chronic bronchitis. Certain people are known to suffer from these pollution-related respiratory problems more so than others. These people include children, the elderly, smokers, people with heart disease, and people with asthma or other forms of lung disease.

It is impossible to predict, however, exactly how many people will develop these problems after being exposed to airborne particulate matter, because people are exposed to many respiratory irritants every day, such as cigarette smoke and indoor air contaminants. Though it is difficult to prove that air pollution is the main cause of any one health problem, ATSDR notes that the elevated incidence of certain respiratory problems among residents living in the EMF study area is reasonably consistent with exposures to unhealthy levels of airborne particulate matter and sulfates.

Though exposure to particulate matter has not been shown conclusively to cause cancer, individual components of particulate matter may be carcinogenic. Based on a review of the limited data available on these components, ATSDR concludes that exposure to potentially carcinogenic heavy metals found in particulate matter in the EMF study area are not likely to result in an appreciable increased risk of carcinogenic health effects in the exposed population. However, this conclusion is limited by the fact that data on annual average concentrations for metals are not available for time periods before 1994, when levels of PM, and hence heavy metals, were notably higher. For some metals, the paucity of toxicological data and the lack of data on the exact chemical species found in the ambient air prevents a complete assessment of the public health implications of exposure.

- ***Is air quality in the area generally getting better or worse?*** There is no single measurement that characterizes overall "air quality" for a region. A relevant indicator of air quality for the EMF study area, however, is levels of airborne particulate matter, the main contaminant of concern for this site. Based on a review of nearly 25 years of air sampling data in the Pocatello area, ATSDR has found that levels of particulate matter since 1994 (when averaged over the long term) are more than 30% lower than levels measured prior to that time. This decrease is most likely the effect of emissions controls that have been implemented on a wide range of sources throughout the EMF study area. Though this trend is certainly encouraging and suggests improving air quality, ATSDR also notes that potentially unhealthy levels of particulate matter continue to be frequently observed in some parts of the Fort Hall Indian Reservation and periodically observed in the cities of Chubbuck and Pocatello. The next two questions address this topic further. Note, the available sampling data are insufficient to determine whether levels of metals and inorganic aerosols in the area are increasing or decreasing.

- ***In what parts of the Fort Hall Indian Reservation are air pollution levels hazardous?*** Air monitors have been operated on the Fort Hall Indian Reservation at locations directly across from the FMC facility for the last 3 years. These monitors consistently measure the highest concentrations of particulate matter in the entire area surrounding the EMF site—a trend suggesting that potentially hazardous levels of air pollution frequently occur on the Fort Hall Indian Reservation at locations between FMC and Interstate 86. Because levels of particulate matter are known to vary over short distances in this area, however, ATSDR is not certain whether unhealthy levels of air pollution occur at locations north of Interstate 86. ATSDR believes this is a critical data gap for this site and highly recommends that air monitors be placed at additional locations on the Fort Hall Indian Reservation, and near where people live, to determine the areas where unhealthy levels of air pollution occur.
- ***In what parts of Chubbuck and Pocatello are air pollution levels hazardous?*** The air quality data indicate that episodes of potentially unhealthy air pollution have affected the entire cities of Chubbuck and Pocatello. These episodes are infrequent and are typically associated with inversions or stagnation conditions, which trap air pollution in the lowest levels of the atmosphere. The fact that the two cities are located in or at the mouth of a valley makes this situation worse, since the mountains prevent pollutants from dispersing. During past pollution episodes, which most often occur in the winter, airborne particulate matter has been measured at potentially unhealthy levels throughout the entire Portneuf Valley—from Idaho State University to Chubbuck School. Though no pollution episodes occurred between 1994 and 1998, the recent and severe episode in December 1999 shows that unhealthy levels of air pollution can still occur throughout Chubbuck and Pocatello. ATSDR believes these episodes will continue to occur in the future unless emissions sources of particulate matter at FMC and Simplot and elsewhere in the area are reduced.

Moreover, the ambient air monitoring data indicate that long-term average levels of particulate matter in much of Chubbuck and Pocatello reached potentially unhealthy levels between 1975 and 1993. These long-term levels were highest in areas closest to FMC and Simplot, and decreased with distance from the facilities.

- ***What is being done about the air pollution in the area?*** State and federal environmental agencies, the Shoshone-Bannock Tribes, the Cities of Chubbuck and Pocatello, FMC, and Simplot have all made efforts to improve air quality near the EMF site and have plans to continue to improve air quality in the future. Most noteworthy are the efforts to control or eliminate the known sources of pollution, thus helping to prevent air quality problems from occurring in the first place. Additionally, state environmental officials have implemented a program that warns residents of potentially unhealthy levels of air pollution before they occur. ATSDR encourages residents to heed these warnings, which are typically broadcast by the media and recommend residents, especially persons with

respiratory conditions, to remain indoors and to avoid moderate levels of exercise as much as possible when air quality is expected to be poor.

The remainder of this health consultation clarifies, defends, and expands upon, the general findings listed above. Moreover, the health consultation presents additional information (e.g., site descriptions, a list of community concerns, a review of air pollution studies) that ATSDR considered when evaluating health concerns for this site. As noted throughout this document, this health consultation does not consider potential exposures to airborne radionuclides—a topic that will be addressed in a future ATSDR health consultation. ATSDR also plans to conduct other public health actions at the EMF site. These actions include: evaluating cancer incidence; preparing a comprehensive public health assessment; continuing to implement health education and outreach activities, as needed; and, evaluating the feasibility of conducting an additional health study in the EMF study area.

for the EMF study area. The Public Health Action Plan (Section VII) provides additional information on future site-related activities.

VII. PUBLIC HEALTH ACTION PLAN

The Public Health Action Plan (PHAP) for this health consultation describes the actions taken or planned for the EMF site. The purpose of the PHAP is to ensure that this health consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from future exposure to hazardous substances in the environment. ATSDR is committed to following up on this plan to ensure that it is implemented. As needed, ATSDR will revise this PHAP by identifying the actions completed and those in progress. The public health actions taken or to be implemented are as follows:

Actions Completed

1. In 1990, ATSDR completed a public health assessment of the EMF site.
2. In 1995, ATSDR completed a health study of persons residing on the Fort Hall Indian Reservation by investigating concerns related to a number of respiratory and renal disorders.
3. In 1997, ATSDR completed a Site Review and Update for the EMF site.
4. From 1997 to 1999, the Idaho Division of Health, Bureau of Environmental Health and Safety (IDOH-BEHS) under a cooperative agreement with ATSDR, collaborated with the Southeastern District Health Department in Pocatello and the Shoshone-Bannock Tribal Health and Human Services in Fort Hall to complete several health education and outreach activities. The following actions were completed during this time frame:
 - conducted environmental health needs assessments among residents of Fort Hall and Pocatello between August and October 1997.
 - conducted an environmental health needs assessment among health care providers serving the Pocatello area between November 1997 and April 1998.
 - conducted a needs assessment among educators in Pocatello School District 25 and the Fort Hall School District in April 1999.
 - formed the Fort Hall/Pocatello Environmental Health Education Working Group to develop and implement an environmental health education strategy to address concerns and needs identified in the needs assessment.
 - participated in several public availability sessions and meetings conducted by either ATSDR or EPA.

EMF Health Consultation

- developed an environmental health education/outreach strategy for implementation in Fort Hall and Pocatello. Activities implemented to date include 1) forming a technical advisory group; 2) publishing articles in the local newspapers discussing identified priority environmental health issues; 3) conducting continuing medical education seminars for health care providers; 4) conducting community environmental health presentations; and, 5) distributing educational materials at several local health fairs and community events
5. In 1998, ATSDR completed three health consultations that addressed the public health implications related to contamination of groundwater, surface water, and sediment.
 6. In 2000, ATSDR, working with IDOH-BESH, developed a fact sheet to accompany the public release of this health consultation.

Action Planned

1. Using the results of this health consultation, ATSDR will evaluate of the public health implications of airborne radionuclides in the EMF study area.
2. ATSDR will evaluate the cancer incidence on the Fort Hall Indian Reservation and in the Pocatello area.
3. After completing the health evaluations for airborne radionuclides and cancer incidence, ATSDR will prepare a comprehensive public health assessment that aggregates the overall public health issues for the EMF site.
4. IDOH-BESH, under the cooperative agreement with ATSDR, will continue to conduct health education/outreach activities, as needed.
5. ATSDR's Division of Health Studies is considering the feasibility of conducting a health study that would examine the effect(s) of air pollution on the cardiopulmonary health of persons who resided in the vicinity of the site.
6. The Shoshone-Bannock Tribe is developing plans to site two new PM2.5 monitors on the Fort Hall Indian Reservation. These plans include the possibility of having them located at a different site than the current locations of the Primary, Background, and Sho-Ban monitors.

ATSDR will reevaluate and expand the Public Health Action Plan (PHAP) when needed. New environmental, toxicological, health outcome data, or the results of implementing the above proposed actions may warrant additional actions at this site.